

**What is claimed is:**

1. A liquid bearing comprising:  
a first surface;  
a plurality of nanostructures disposed on at least a first area of said first  
5 surface;  
a second surface;  
a liquid droplet in contact with said plurality of nanostructures on said  
first surface and said second surface, said droplet adapted to reduce friction  
between said at least a first nanostructured surface.
- 10 2. The liquid bearing of claim 1 wherein said first surface is the surface  
of a component adapted to move laterally with respect to said second surface.
3. The liquid bearing of claim 1 wherein said first surface is the surface  
of a component adapted to move rotationally with respect to said second  
surface.
- 15 4. The liquid bearing of claim 1 wherein said liquid droplet is disposed  
in a way such that it is suspended substantially on the ends of the  
nanostructures in said plurality of nanostructures.
5. The liquid bearing of claim 1 wherein said second surface  
comprises a plurality of nanostructures.
- 20 6. The liquid bearing of claim 1 wherein the density of a first portion of  
nanostructures in said plurality of nanostructures is different from the density  
of a second portion of said nanostructures in said plurality of nanostructures in  
a way such that said liquid droplet maintains a desired position relative to said  
first portion of nanostructures.
- 25 7. The liquid bearing of claim 1 wherein said first surface and said  
second surface are surfaces of a microelectromechanical system motor.
8. The liquid bearing of claim 1 wherein said first surface and said  
second surface are surfaces of a microfluidic pump.

9. The liquid bearing of claim 1 wherein said first surface and said second surface are surfaces of a microchemical reactor.

10. Apparatus comprising:

5 a first nanostructured surface having a first plurality of nanostructures disposed thereon;

a second nanostructured surface having a second plurality of nanostructures disposed thereon,

wherein said first nanostructured surface and said nanostructured surfaces comprise surfaces of the same component;

10 a third surface;

a first liquid droplet in contact with said first plurality of nanostructures and said third surface,

wherein said first liquid droplet is adapted to reduce friction between said first plurality of nanostructures and said third surface;

15 a fourth surface; and

a second droplet of liquid in contact with said second plurality of nanostructures and said fourth surface,

wherein said second droplet of liquid is adapted to reduce friction between said second plurality of nanostructures and said fourth surface.

20 11. The apparatus of claim 10 wherein said first nanostructured surface and said second nanostructured surface are surfaces on opposite sides of a mass in a gyroscope, said mass adapted to rotate with respect to said third surface and said fourth surface.

25 12. The apparatus of claim 10 wherein said first nanostructured surface and said second nanostructured surface are surfaces on opposite sides of a component in a microelectromechanical system motor.

13. A gyroscope comprising:

a housing;

30 a mass comprising a first nanostructured surface and a second nanostructured surface;

a first droplet of liquid disposed in a way such that said mass is separated by said liquid from a first surface of said housing;

a second droplet of liquid disposed in a way such that said mass is separated by said second liquid from a second surface of said housing;

5 means for initiating and maintaining at least a first nonzero angular velocity of said mass;

means for detecting whether said mass has changed position relative to at least a third surface of said housing.

10 14. The gyroscope of claim 13 wherein said third surface of said housing comprises said second surface of said housing.

15 15. The gyroscope of claim 13 wherein said mass comprises a plurality of mass segments, each of said segments electrically insulated from the other segments in said plurality.

16 16. The gyroscope of claim 15 wherein said housing comprises a plurality of housing segments, each of said segments electrically insulated from the other segments in said plurality.

20 17. The gyroscope of claim 16 wherein at least a first housing segment in said plurality of housing segments comprises a housing segment electrical charge, said housing segment electrical charge adapted to electrostatically attract at least a first mass segment.

18. The gyroscope of claim 16 wherein at least a first housing segment in said plurality of housing segments comprises a housing segment electrical charge, said housing segment electrical charge adapted to electrostatically repel at least a first mass segment.

25 19 The gyroscope of claim 13 wherein said means for detecting comprises mean for detecting a change in capacitance over at least a portion of said gyroscope.

20. A method for reducing friction between a first surface and a second surface, said first surface comprising a plurality of nanostructures, said first surface adapted to move laterally relative to said second surface, said method comprising:

5 disposing at least a first droplet of liquid in a way such that said droplet is in contact with at least a portion of nanostructures in said plurality of nanostructures,

wherein said at least a first droplet of liquid is also in contact with said second surface in a way such that said second surface is separated from said at least a portion of nanostructures by said at least a first droplet.

10

21. A method for reducing friction between a first surface and a second surface, said first surface comprising a plurality of nanostructures, said second surface adapted to move laterally relative to said second surface, said method comprising:

15 disposing at least a first droplet of liquid in a way such that said droplet is in contact with said second surface and at least a portion of nanostructures in said plurality of nanostructures,

wherein said second surface is separated from said at least a portion of nanostructures by said at least a first droplet.